

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
22 April 2004 (22.04.2004)

PCT

(10) International Publication Number
WO 2004/033485 A2

- (51) International Patent Classification⁷: C07K
- (21) International Application Number:
PCT/US2003/032426
- (22) International Filing Date: 9 October 2003 (09.10.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/417,323 9 October 2002 (09.10.2002) US
60/478,803 16 June 2003 (16.06.2003) US
- (71) Applicant (for all designated States except US): THE TRUSTEES OF BOSTON UNIVERSITY [US/US];
One Sherborn Street, Boston, MA 02218 (US).

R. [US/US]; 526 Stratford Court, Del Mar, CA 82014 (US). BROUDE, Natalia, E. [US/US]; 298 Bacou Street, Natick, MA 01760 (US). WITTE-HOFFMANN, Carlos [CU/US]; 435 Hanover Street, Apt. 5D, Boston, MA 02113 (US).

(74) Agents: EISENSTEIN, Ronald, I. et al.; Nixon Peabody LLP, 101 Federal Street, Boston, MA 02110 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

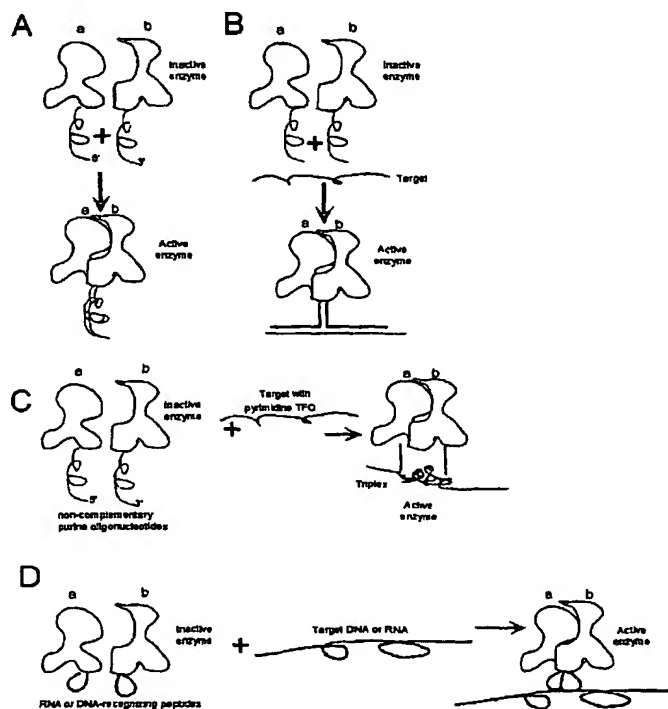
- (72) Inventors; and
(75) Inventors/Applicants (for US only): CANTOR, Charles,

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),

[Continued on next page]

(54) Title: NUCLEIC ACID SUPPORTED PROTEIN COMPLEMENTATION

Protein complementation supported by nucleic acid interactions



(57) Abstract: The present invention is directed to novel methods for *in vitro* and *in vivo* detection of target nucleic acid molecules, including DNA and RNA targets, as well as nucleic acid analogues. The present invention is based on protein complementation, in which two individual polypeptide fragments are inactive. When the two inactive polypeptide fragments are brought in close proximity during hybridization to a target nucleic acid, they re-associate into an active, detectable protein.